**Origination Date:** 11/01/2011

**Originator:** AT&T

### Change Order Number: NANC 447

**Description:** NPAC Support for CMIP over TCP/IPv6

**Functionally Backward Compatible:** Yes

## IMPACT/CHANGE ASSESSMENT

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| FRS | IIS | GDMO | ASN.1 | NPAC | SOA | LSMS |
| N | Y | N | N | Y | Y | Y |

**Business Need:**

Currently the NPAC supports IPv4 as the Internet addressing protocol. Due to various corporate initiatives, several Service Providers have inquired about the desire and timeline of the NPAC supporting IPv6 addresses. The purpose of this change order is to request analysis to determine the feasibility and timing of adding support for IPv6.

## What is IPv6?

IPv6 network protocol is the successor to IPv4, the Internet addressing protocol which has been used for many years since the early days of the Internet. When the Internet was first established, it was a research network and the addressing was limited. It was never thought that it would be used to connect everything from a mobile phone to a hi-fi or refrigerator. Opinions vary greatly but current estimates indicate that we will run out of available IPv4 based addresses in the next few years. IPv6 solves this problem and also introduces new features to improve how the Internet works. The current IPv4 address space contains 232 or approximately 4.3 billion addresses. The number of addresses offered by IPv6 is 2128 or approximately 340 undecillion (3.4 x 1038 or 340 trillion networks of one trillion addresses each).

Links for more info on IPv6:

<http://en.wikipedia.org/wiki/IPv6>

<http://www.networkdictionary.com/networking/IPv6vsIPv4.php>

## How does this affect the NPAC?

Currently, all network communication between service providers and the NPAC (i.e., SOA, LSMS, LTI, web sites, email, etc.) use IPv4 addresses. In addition to network routing, there is an IPv4 address embedded in the NSAP (Network Service Access Point) used by the OSI stack. This means there must be changes made for the LNP systems (NPAC, SOA, and LSMS) to use IPv6.

**Description of Change:**

To facilitate a transition from IPv4 to IPv6 the NPAC should use a dual-stack approach, allowing providers to migrate their networks on their corporate timetable.

**FRS:**

None.

**IIS:**

## OSI Protocol Support

The SOA to NPAC SMS and NPAC SMS to Local SMS interfaces must be implemented over the protocol stack shown in Exhibit 1.

Exhibit 1. NPAC/SMS Primary Network Protocol Stacks

| **Layer** | **Mechanized Interface** | **Function** |
| --- | --- | --- |
|  | CMIP Agent Server | User |
| **7** | CMISE, ACSE, ROSE | Application |
| **6** | ANSI T1.224 | Presentation |
| **5** | ANSI T1.224 | Session |
| **4** | TCP, RFC1006, TPO | Transport |
| **3** | IP | Network |
| **2** | PPP, MAC, FRAME Relay, ATM (IEEE 802.3) | Link |
| **1** | DS-1, DS-0 x n, ISDN, V.34 | Physical |

Multiple associations per service provider to the NPAC SMS can be supported when using different function masks. The secure association establishment is described in *Section 5*.

The NPAC SMS, through a dual OSI stack, supports addressing schemes using IPv4 and IPv6.

**GDMO:**

None.

**ASN.1:**

None.